Electrical Aerospace Ground Equipment (EAGE)

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Top Level Requirements

- Provide ISC Electrical Aerospace Ground Equipment (EAGE) and Support ISC Box Level Testing, Integration, and Validation
- Provide Spacecraft EAGE, Electrical Launch Support Equipment (ELSE) and Support System Level Spacecraft Integration, Test, and Validation Through Launch Base Operations
- Provide a Spacecraft Simulator (SATSIM) and Support Flight Software Development and Mission Operations
- Ensure Safety of Brassboard and Flight Hardware During All Phases

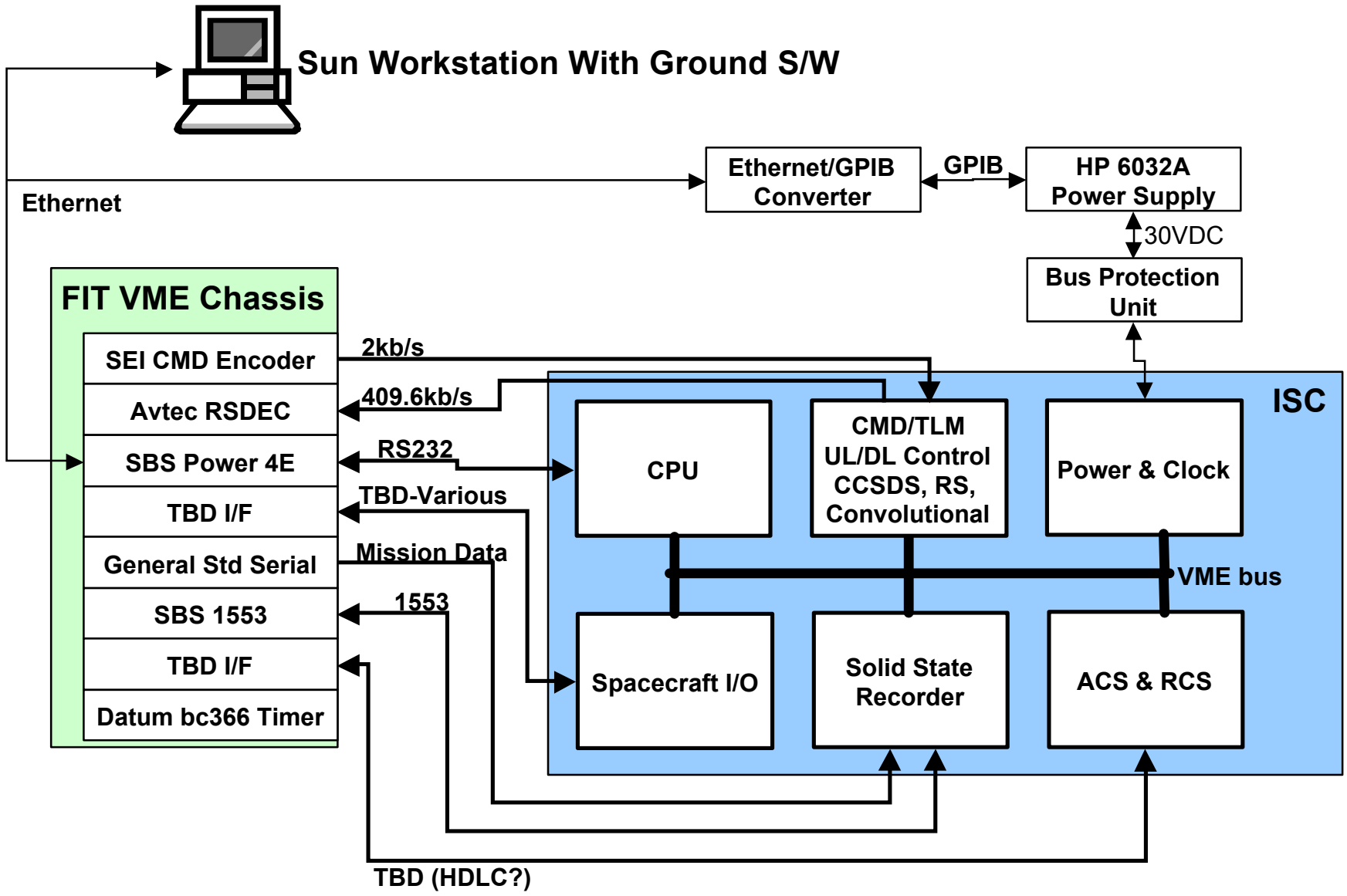
Current Baseline/Approach (1 of 8)

- Overall Testing and Integration Approach
  - Use a VME-Based Chassis and Sun Workstations Running Test Software That Utilizes Scripting and Allows for Commanding and Telemetry Display
  - Employ Automated Testing Using Scripting
  - Protect Brassboard and Flight Hardware by
    - Observing Safe Grounding and Static-Sensitive Handling Procedures
    - Utilizing Bus Protection Units (BPUs) When Powering Spacecraft Systems and Subsystems

Current Baseline/Approach (2 of 8)

- ISC Testing and Integration
  - Interfaces to Be Addressed
    - RS-232 (Processor Test Port)
    - CMD/TLM Links (Clock and Data)
    - Power (28 VDC)
    - Data Recorder Control Port
    - Data Recorder Data Port
    - IMU, Sun Sensor Inputs (ACS/RCS)
    - Spacecraft Subsystem CMD/TLM

Current Baseline/approach (3 of 8)



Current Baseline/Approach (4 of 8)

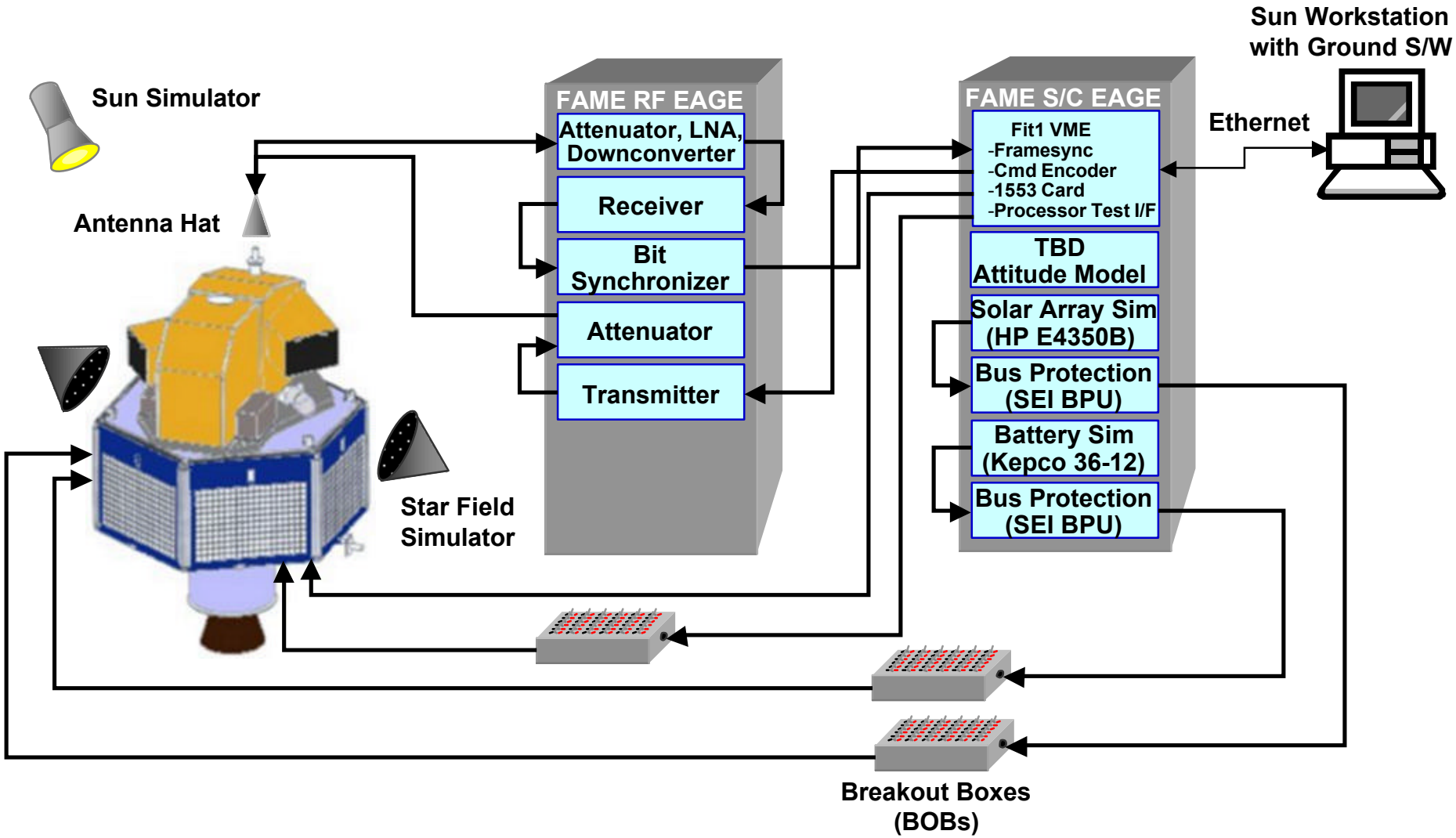
- FAME Integration and Test 1 (FIT1)
  - SBS Power 4E Processor
  - SBS 1553 Card ABI-V6-2
  - SEI Command Encoder Unit
  - Avtec Data Decoder RSDEC (Framesync)
  - Datum Timer Card BC366
  - To Be Added:
    - General Standards Serial Card
    - TBD Mission Data I/F
    - TBD S/C I/O I/F

Current Baseline/Approach (5 of 8)

- Spacecraft EAGE
  - Expand/Change ISC EAGE to Address Spacecraft Interfaces
  - Interfaces to Be Addressed
    - ISC Test Port
      SBS Power 4E
    - S-Band Transponder
      RF EAGE (Not Shown)
    - Star Trackers
      Depends on Manufacturer
    - Sun Sensor
      Sun Lamp
    - Battery
      Kepco BOP 36-12M
    - Solar Arrays
      HP E4350B
    - Bus Protection for Power Supplies
      Silver Engineering BPU

Current Baseline/Approach (6 of 8)

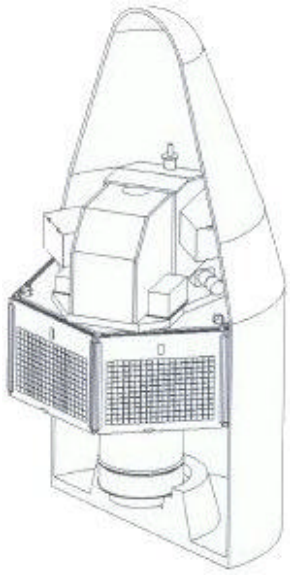
- **Spacecraft EAGE Diagram**



* Most testing scenarios do not use antennas

Current Baseline/Approach (7 of 8)

- **ELSE**
  - **Use Similar Approach to Spacecraft EAGE, Remove Unnecessary Functions**
  - **Provide Spacecraft Support Through Umbilical Cord**
    - **Support Battery Charging HP 6032A-J01**
    - **Support Spacecraft Command**
    - **Ordnance Control Functions:**
      - **Thruster/Motor Arming**



Current Baseline/Approach (8 of 8)

- **SATSIM**
  - **Use VME-Based Chassis and Existing Breadboard/Brassboard Hardware As It Becomes Available**

Trade Studies

- None

Issues

- Budgeting of RF EAGE Rack
- Retention of ISC, 1553 Bus Access During Spacecraft Integration
- Fidelity of Closed Loop Attitude Modeling/Testing With Spacecraft
- Validation of FAME Instrument After Mate With Spacecraft

Top Level Schedule

ID	Task Name
1	ISC EAGE requirements
2	Preliminary ISC EAGE design
3	ISC EAGE Requirement spec
4	ISC EAGE design & HW procurement
5	ISC board testing begins
6	
7	EAGE requirements
8	Preliminary EAGE design
9	EAGE Requirement spec
10	EAGE design & HW procurement
11	EAGE rack & stack
12	Table Top integration
13	
14	ELSE requirements
15	Preliminary ELSE design
16	ELSE Requirement spec
17	ELSE design & HW procurement
18	ELSE rack & stack
19	Launch
20	
21	Flat sat requirements
22	Preliminary Flat sat design
23	Flat sat Requirement spec
24	Flat sat design & HW procurement